

# VA Application Note No. V - 142

**Title:** Brightener «MACuSpec™ PPR 100 Brightener» in acid copper baths (MacDermid)

**Summary:** Determination of brightener «MACuSpec™ PPR 100 Brightener» in acid copper baths by modified linear approximation technique (MLAT) using cyclic voltammetric stripping (CVS).

**Sample:** Acid copper electroplating bath

**Sample preparation:** None

## Analysis of brightener «MACuSpec™ PPR 100 Brightener»

**Electrolyte** Virgin make-up solution (VMS)  
CuSO<sub>4</sub>, H<sub>2</sub>SO<sub>4</sub> and HCl concentrations according to the supplier specifications.

**Measuring solution** **Intercept solution**  
38 mL VMS  
+ 2 mL «PPR 100 makeup solution»

**Sample**  
5 mL acid copper plating bath

**Standard addition solution**  
«MACuSpec™ PPR 100 Brightener» diluted 1:10 with VMS

**Working electrode (WE)** **Pt-RDE:**  
Drive shaft .....6.1246.000  
+ Pt tip for CVS .....6.1204.160

**Auxiliary electrode (AE)** **Pt**.....6.0343.000

**Reference electrode (RE)** Reference system: Ag/AgCl/KCl (3 mol/L) ....6.0728.020  
Intermediate electrolyte: H<sub>2</sub>SO<sub>4</sub> (1 mol/L).....6.1245.010

### Parameters

Working electrode	RDE (hydrodynamic measurement)
Stirrer speed	2000 rpm
Mode	CVS
Calibration technique	MLAT
Start potential	1.575 V
First vertex potential	-0.275 V
Second vertex potential	1.575 V
Voltage step	0.006 V
Sweep rate	0.1 V/s
Peak potential (Cu)	0.25 V ± 0.25 V

**Determination of brightener «MACuSpec™ PPR 100 Brightener»**

